Work and Energy

Work :

When a force displaces a body in the direction of applied force then the product of the force and displacement is called the work done by the force on the body.

Work done depends on :

a. Force applied
b. Displacement

Conditions for work to be done ?

1. A force must be applied on the object

Work done	No Work done
boy kicking a football	pushing a wall
squeezing a rubber ball	reading a book
climbing the stairs	porter standing still with heavy luggage

Work done or not ?

Types of Energy

Mechanical Energy

Kinetic Energy
- Energy possessed by a body due to its motion
- K.E = ½ mv^2
- Unit - joule

Potential Energy
- the stored up energy of a body due to its position which has potential to do work.
- P.E = m x g x h
- Unit – joule
- Ex : compressed spring,

Gravitational Potential Energy
- A stone kept at some height from ground

Elastic Potential Energy
- Wound up watch spring

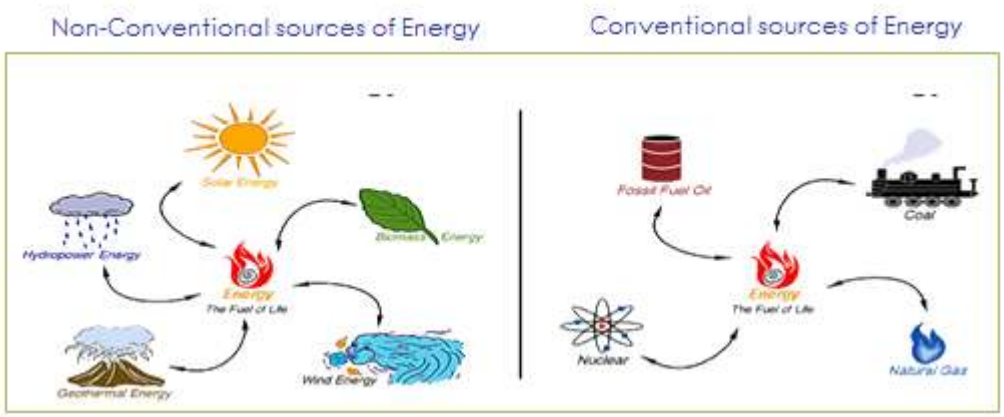
Energy in Action
- Light Energy
- Sound Energy
- Heat (Thermal) Energy
- Electrical Energy

Stored Energy
- Chemical Energy
- Magnetic Energy
- Nuclear Energy

Energy :

It is the ability or capacity to do work.

Energy is the cause - Work is its



Transformation of Energy:

- *Electric bulb:* electrical -> light and heat
- *Table fan & electric motor* : electrical -> kinetic
- *Generator* : kinetic -> electrical
- *Door bell & loudspeaker* : electrical -> sound
- *Pendulum* : between kinetic and potential
- *Microphone* : sound -> electrical
- *Hydroelectric power station* : P.E of water -> K.E -> electrical
- *Cell or battery* : chemical -> electrical
- *Stem engine* : chemical -> heat -> K.E

Save Energy :

- use solar cookers
- do not waste water
- switch off fans , lights and other electrical devices when not in use